# PHENIX
# WEEKLY PLANNING


June 25, 2015

C. Biggs

# This Week

1. Monday – Ended run in the AM.
   Started inert gas purge
   Eric's VTX work
2. Tuesday – Began set up for magnet tests
3. Wednesday – Continue magnet tests
   Prep Ass'y. Hall for wall roll out
   Start wall roll out
   Replace cam rollers on wall base
4. Thursday – Finish magnet tests
   Finish wall roll out
   Start wall disassembly

# Next Week

Mon. – Finish wall disassembly
Prep East Carriage for roll out
Tues. – Remove Collars
Move So. Magnet south
Prep E. Carriage for roll out
Weds. – Start E. Carriage roll out
Thur. – Finish E. Carriage roll out
Fri. – Prep IR for summer work
Start VTX disassembly

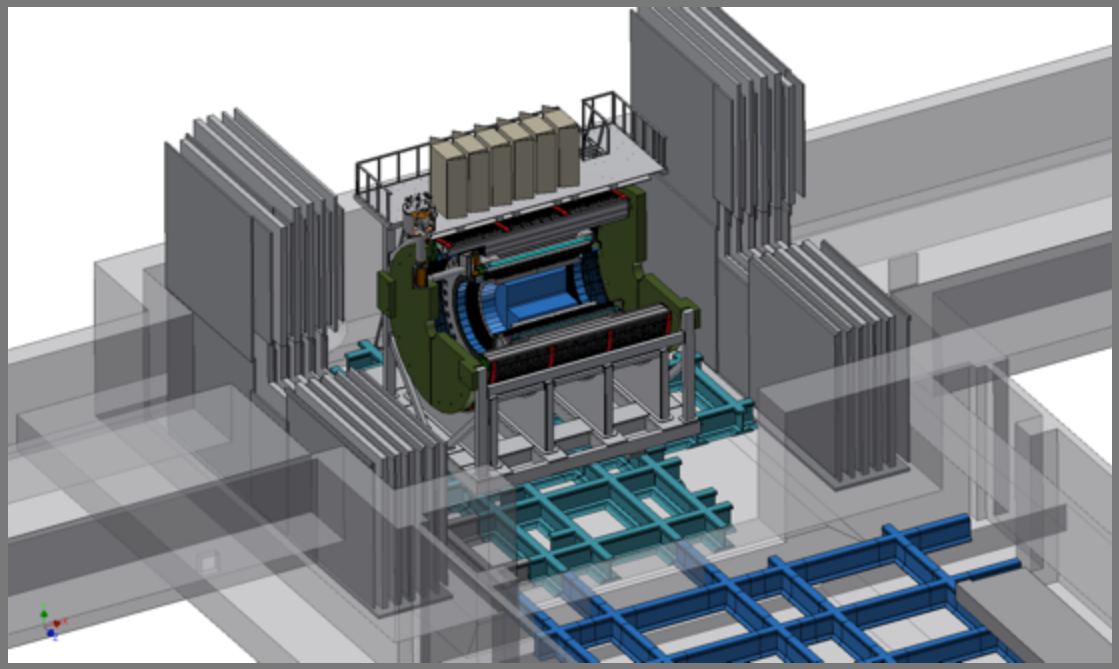
# 2015 SHUTDOWN SHEDULE

| | |
|---|---|
| June 19th | End of Run Party |
| JUNE 22ND | END OF RUN |
| June 23rd | Roll out Shield Wall |
| June 25– 30 | Remove Shield Wall |
| June 24 - 29 | Pixel Testing on VTX (Chuck, Eric) |
| July 1 | Remove Collars, Move South Magnet south |
| July 2 – July 6 | Disconnect & roll out East Carriage |
| July 6 – 7 | Setup up IR for shut down work |
| July 6 – 10 | De-Cable & remove East VTX/FVTX, move to 510 |
| July 9th | Erect Scaffold between south and central magnets |
| July 10th | Set up MPC-ex “sled” |
| July 13 – 16 | De-Cable & remove West VTX/FVTX, move to 510 |
| July 13 – 16 | Remove MPC-ex south, MPC South Crystals |
| July 17 – Aug 7 | Repairs and upgrades to MPC-ex and MPC south in 510 |
| July 17 – Sept 21 | Repairs to East VTX/FVTX in 510 |
| July 17 - Oct 19 | Repairs to VTX/FVTX West in 510 |
| July 29 -31 | Deliver and set up “Dance Floor” for Summer Sunday |
| Aug 2 | SUMMER SUNDAY @ PHENIX |

# 2015 SHUTDOWN SCHEDULE (cont.)

| | |
|---|---|
| Aug 3 – 26 | DC East and West Repairs |
| Aug 10 – 21 | Replace & Troubleshoot MPC and MPC-ex South |
| Aug 24 – 26 | Remove South scaffold and move CM south |
| Aug 27th | Erect Scaffold between CM and North magnet |
| Aug 28th | Install MPC-ex “sled” in north |
| Aug 31 – Sept 2 | Remove MPC-ex North & MPC North crystals |
| Sept 3 – 24 | Repairs and upgrades to MPC-ex and MPC North in 510 |
| Sept 22 -25 | Re-install and re-cable VTX/FVTX West |
| Sept 24 – Oct 8 | Replace & Troubleshoot MPC and MPC-ex North |
| Sept 28 – Nov 20 | Troubleshoot VTX/FVTX Systems |
| Oct 20 – 23 | Re-Install and re-cable VTX/FVTX East |
| November | DC Wire Repairs |
| Dec 1 – 4 | Prep IR for Run 16 |
| Dec 7- 9 | Move in East Carriage |
| Dec 10 – 15 | Build Shield Wall |
| Dec 16 | Move Shield Wall in |
| Dec 10 – 23 | White, Pink, and Blue Sheeting |

# sPHENIX Engineering Status



June 25, 2015

# Current Project Status & News

- Master Project Schedule Scrubbing continues
  - Magnet, Tracker still needed
- sPHENIX New collaboration forming meeting
  - sPHENIX name change? “Celeste”, “Justice”, “Just Ice”, “Met Life”, any suggestions?
  - Attendees were enthusiastic and it looks like we’re off to a good start
- Magnet Meeting Last Week
- HCal performance prototype drawings (absorbers and end plates) procurement initiated
- Department Cost and Schedule reviews next fall

# sPHENIX Project Major Milestones: R&D

- CD0 - September 2015
- HCal Preliminary R&D - December 2015
- EMCal Preliminary R&D - December 2015
- Calorimeter Prototype Beam Test(1) - April 2016
- Calorimeter full scale Engineering Prototypes - May 2016
- Calorimeter Wooden Bird Prototypes - December 2015
- V2 Calorimeter Prototype Test - October 2016
- Preproduction Calorimeter Prototype Tests - October 2017
- Tracker Preliminary R&D complete - TBD
- Tracker Prototype(s) v1 test - TBD
- Tracker Prototype(s) v2 test - TBD
- Preproduction Tracker Prototype(s) test - TBD

# sPHENIX Project Major Milestones: Production

- CD0 - September 2015
- Calorimeter Prototype Beam Test - April 2016
- Begin Decommissioning - July 2016
- Complete Decommissioing - October 2017
- Start Infrastructure Procurement - October 2016
- Start Detector Procurement
  - Outer HCal - December 2018
  - Inner HCal - December 2018
  - EMCal - December 2018
  - Tracker - TBD
- Start Detector/ Magnet Installation
  - Base -
  - Outer HCal -
  - Inner Hcal -
  - EMCal -
  - Tracker -
- Start Magnet Mapping -
- Detector Commissioning Complete, Ready for 1st Run -

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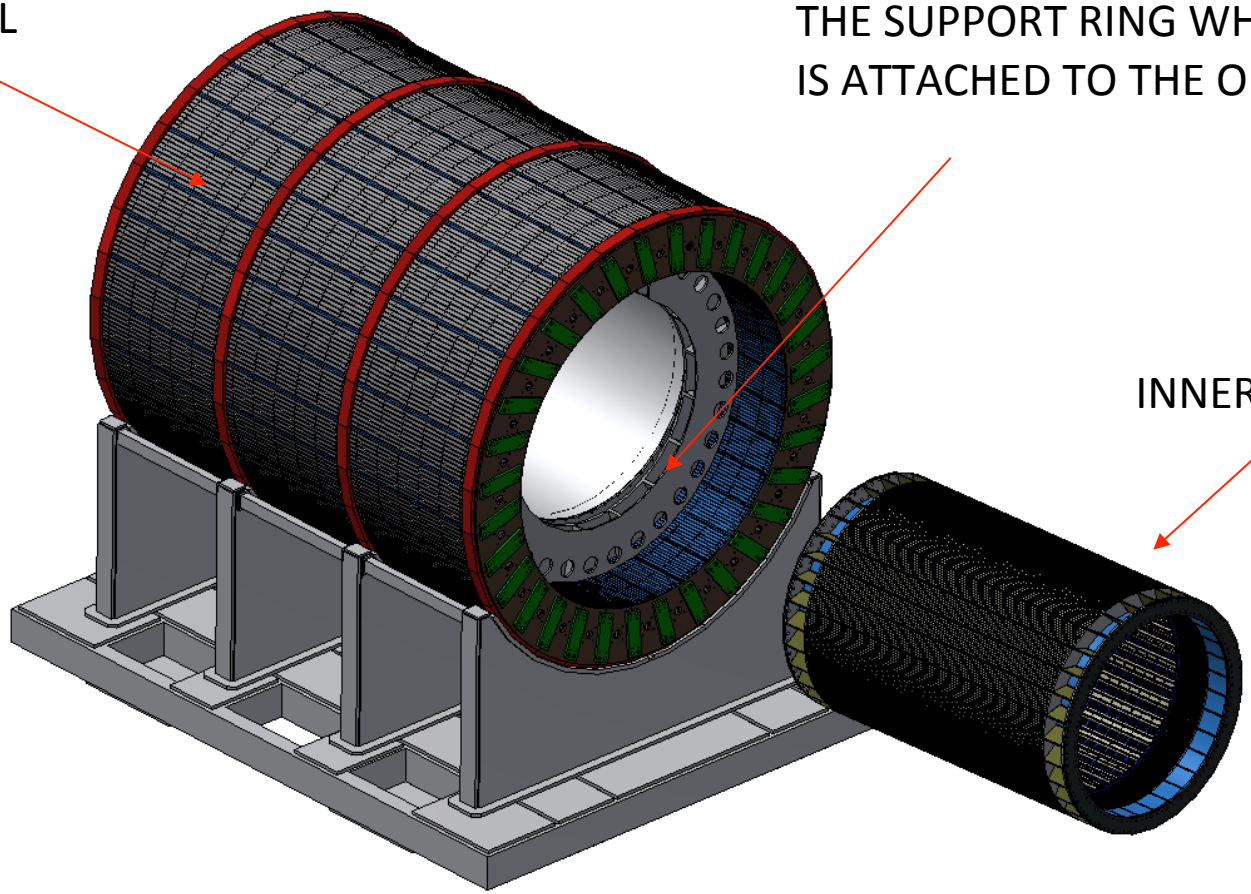
# sPHENIX Inner H-Cal Assembly and Module Installation

# HCAL OVERVIEW

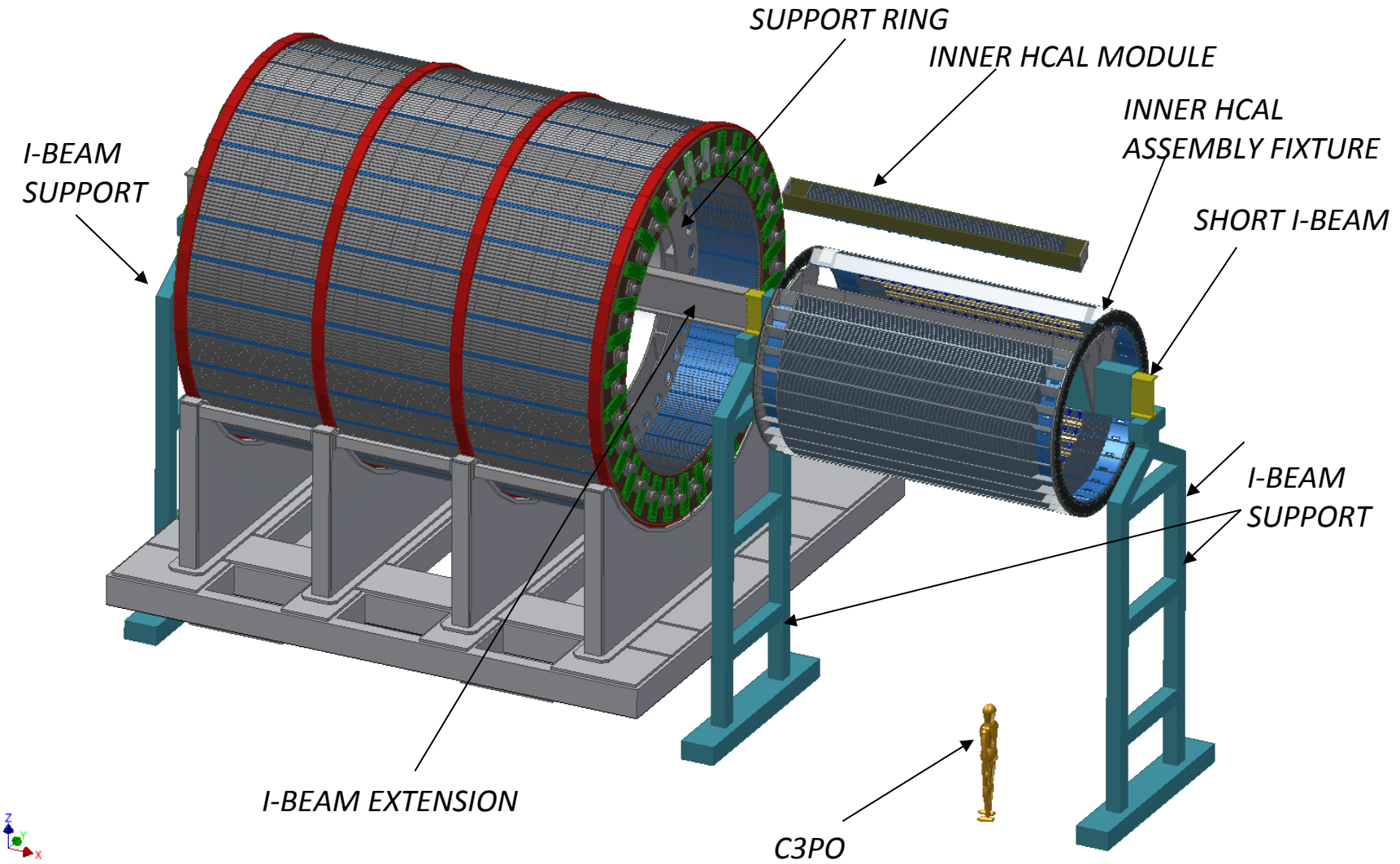
OUTER HCAL

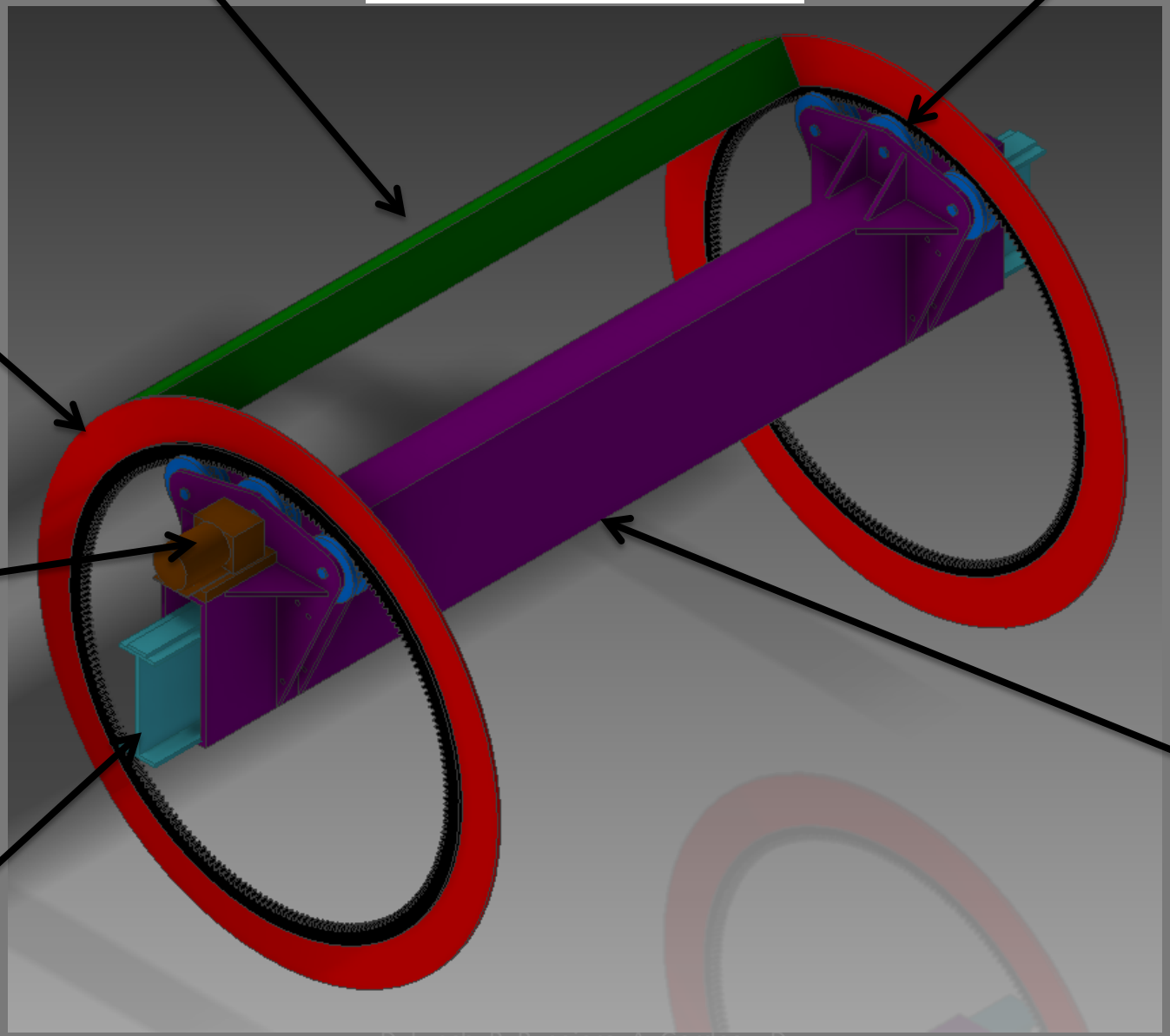
INNER HCAL IS ATTACHED TO THE SUPPORT RING WHICH IS ATTACHED TO THE OUTER HCAL.



INNER HCAL

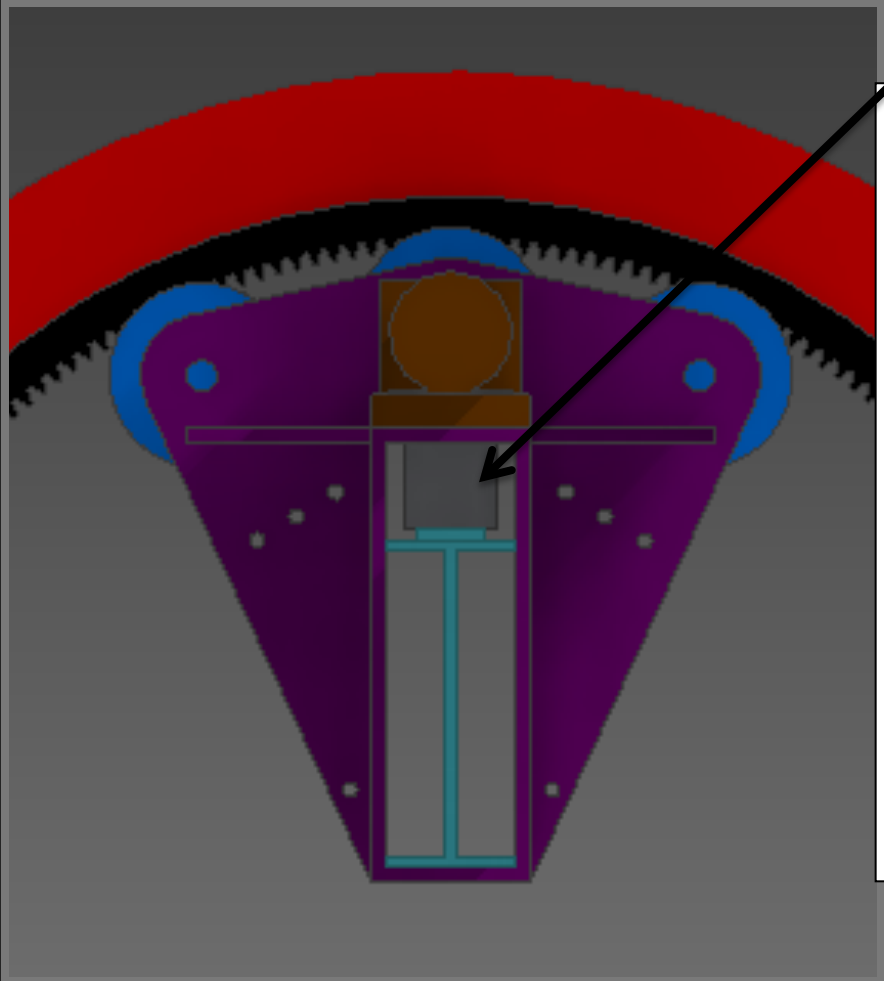
# INNER HCAL INSTALLATION

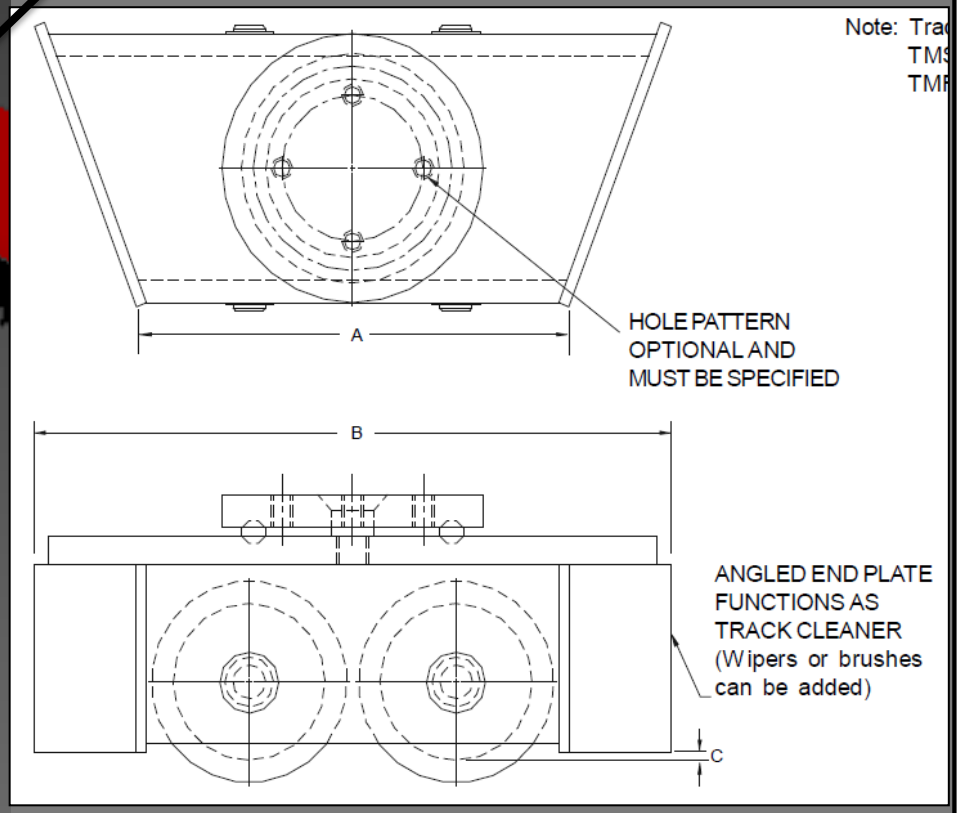



One Module
Internal / External Gear Set
Support Ring
Speed Reducer and Motor
Cart
I-Beam

PHOENIX

Track / Roller System






HILMAN ROLLERS
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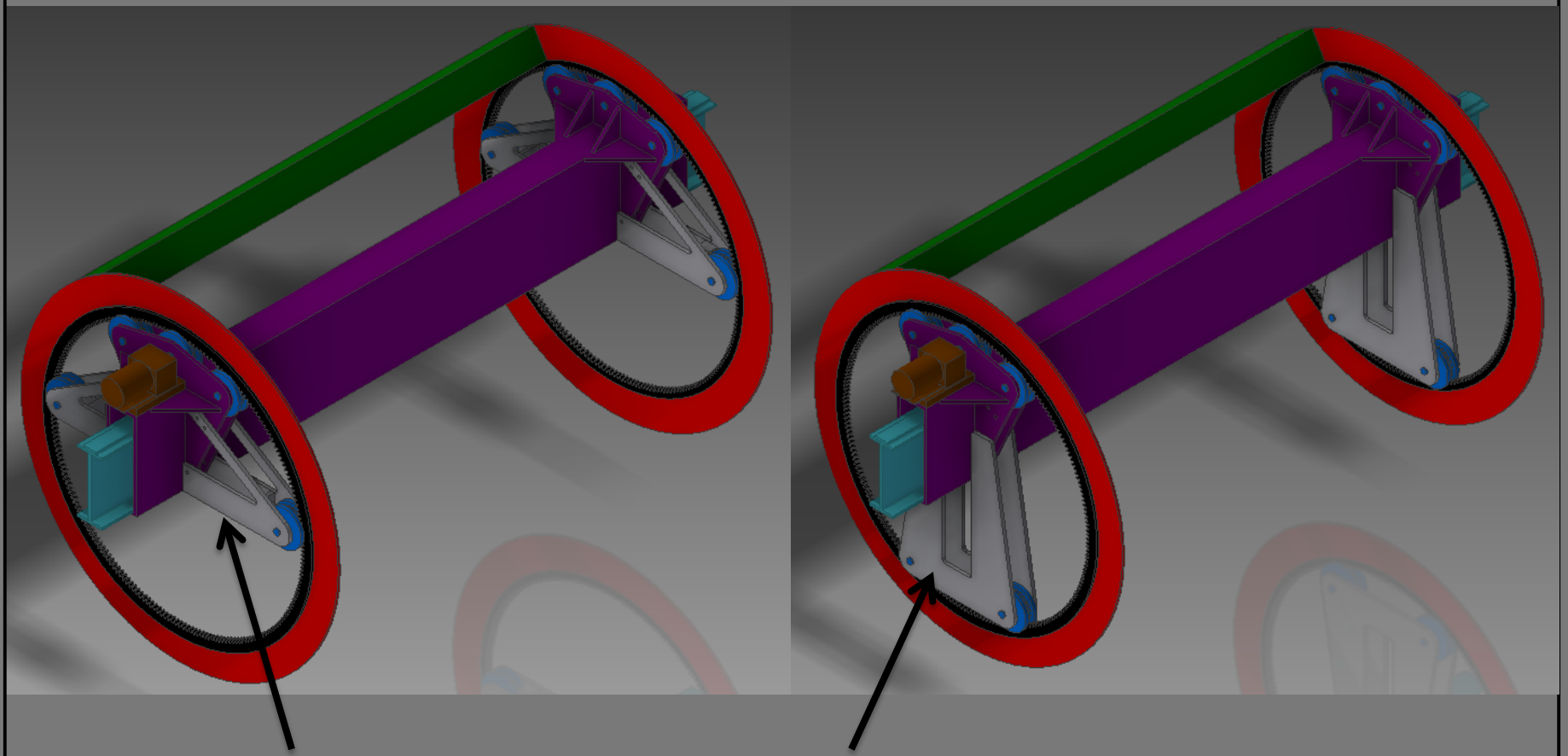
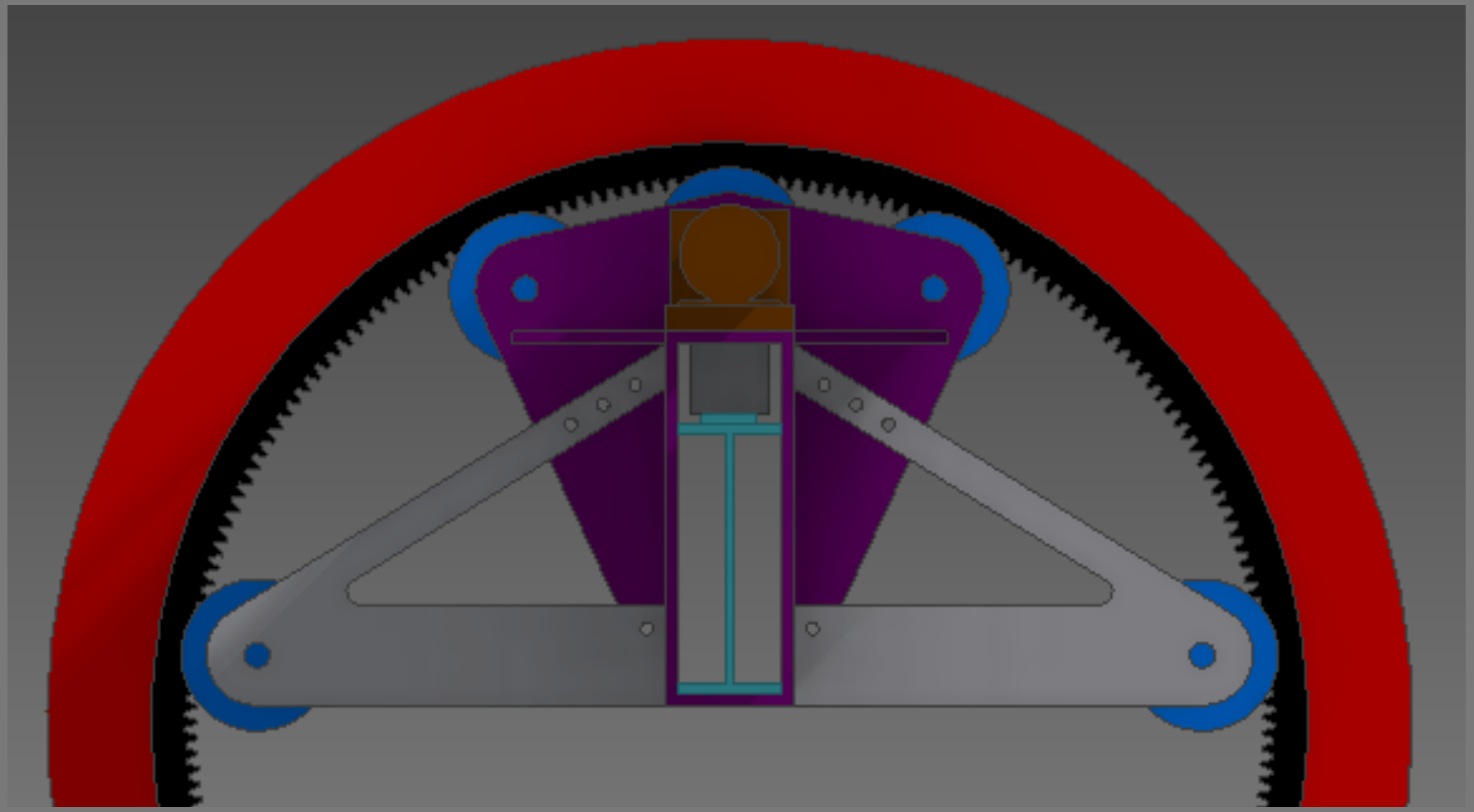
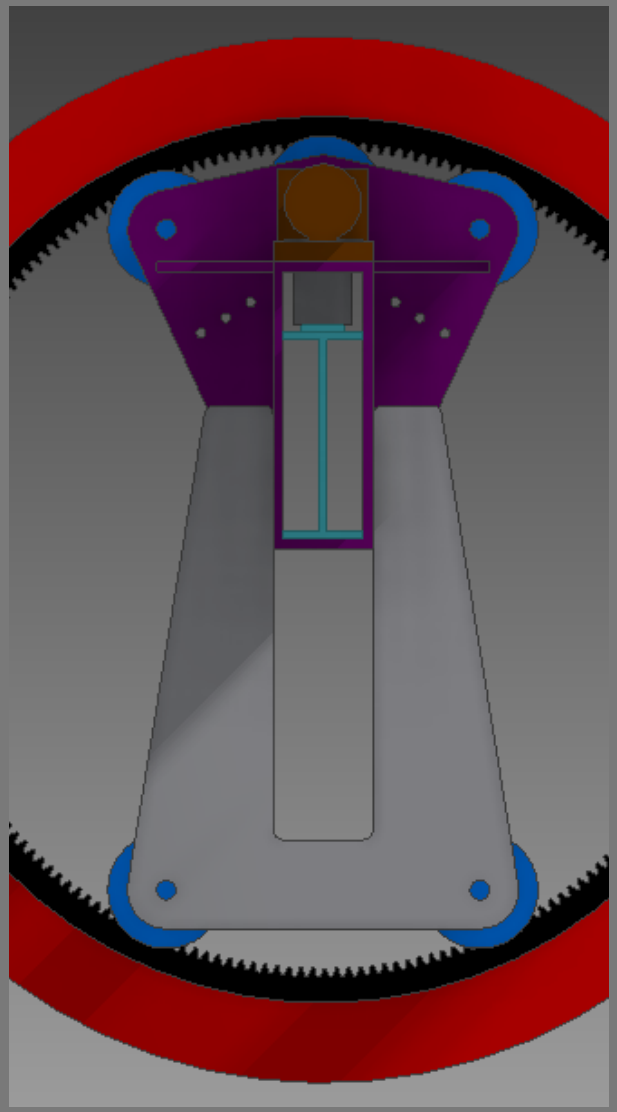


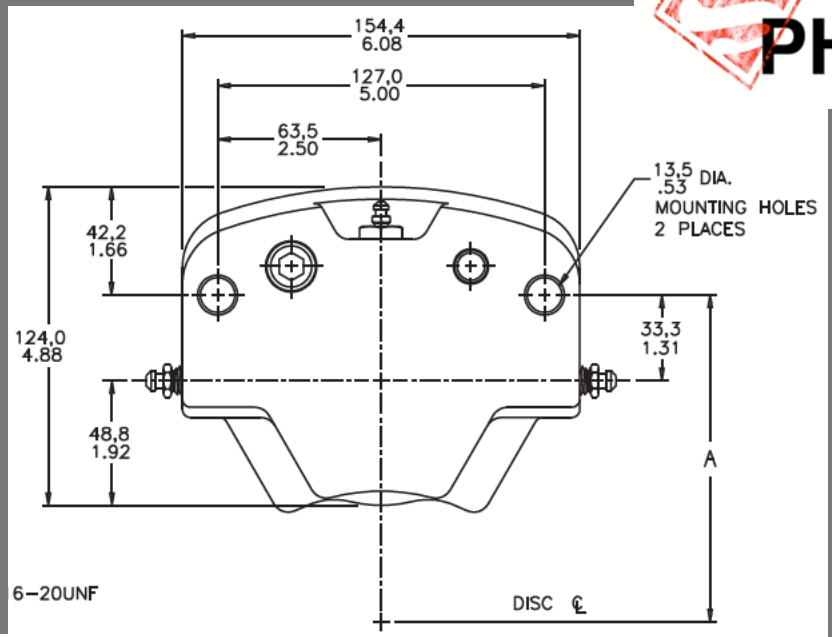
Potential Flange Designs for Balance / CG Shift for Odd number of Modules

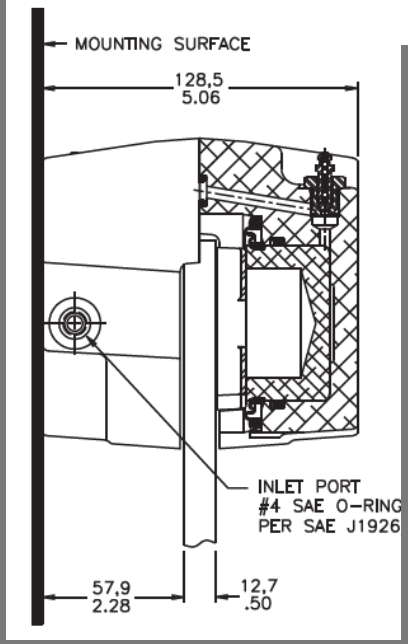




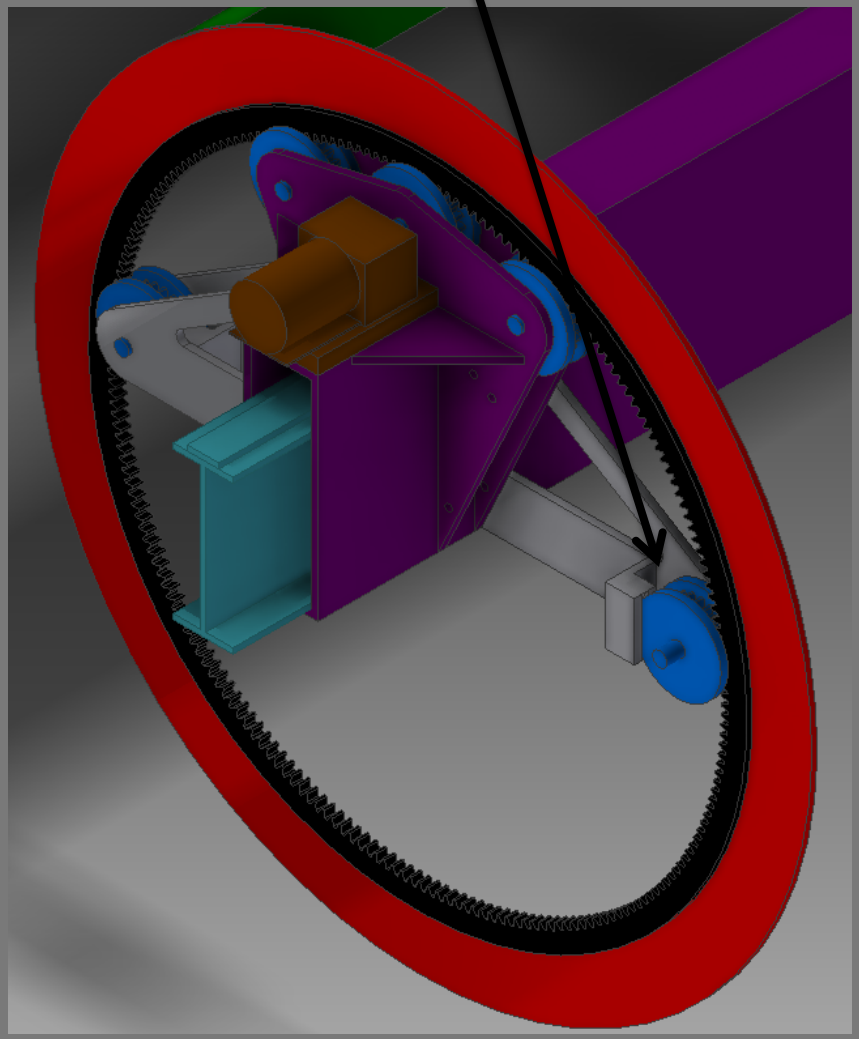
PHOENIX

Caliper Disc Brakes
Car / Construction?

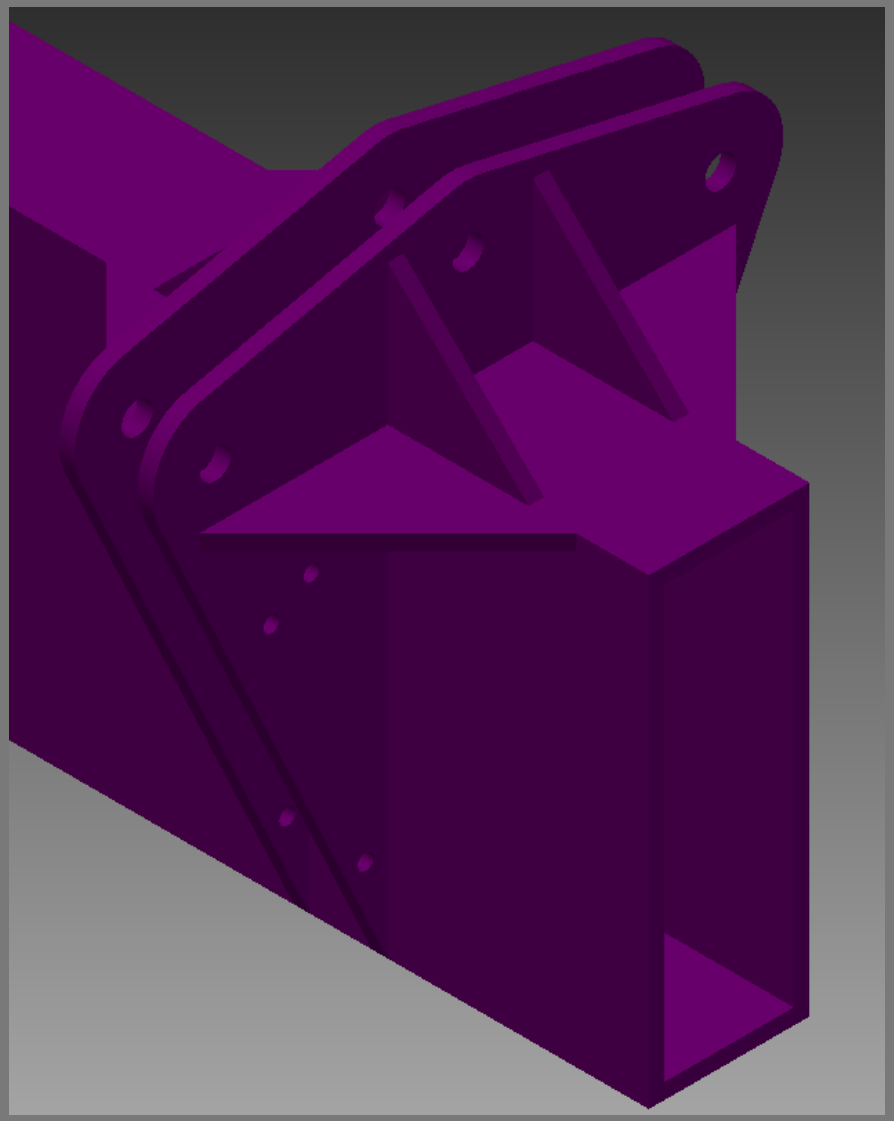


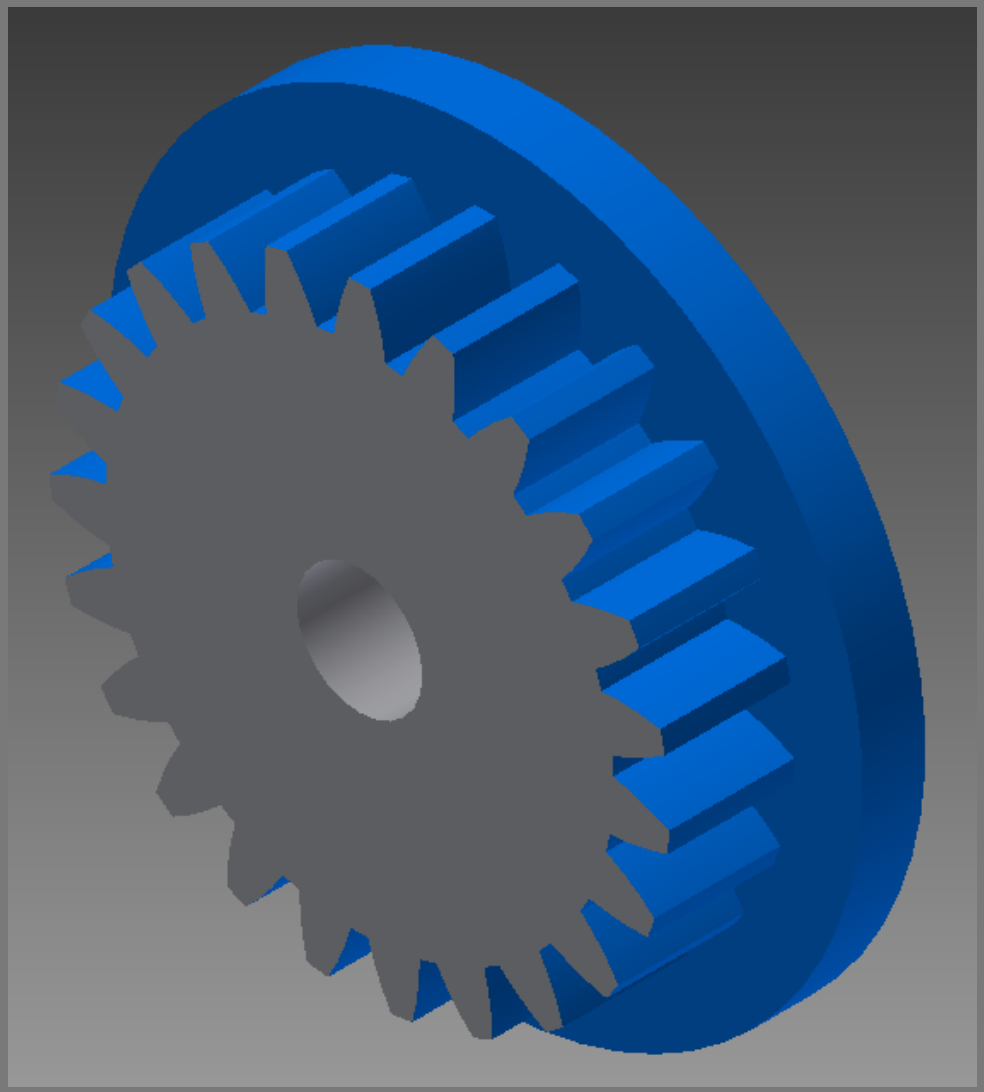

MICO®



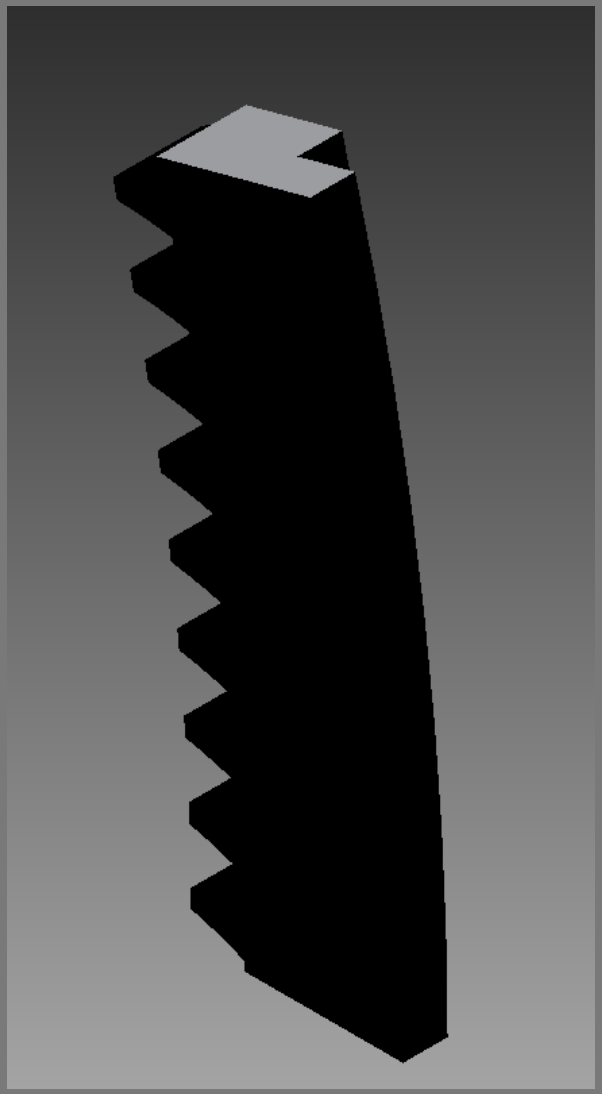
Cart Flange



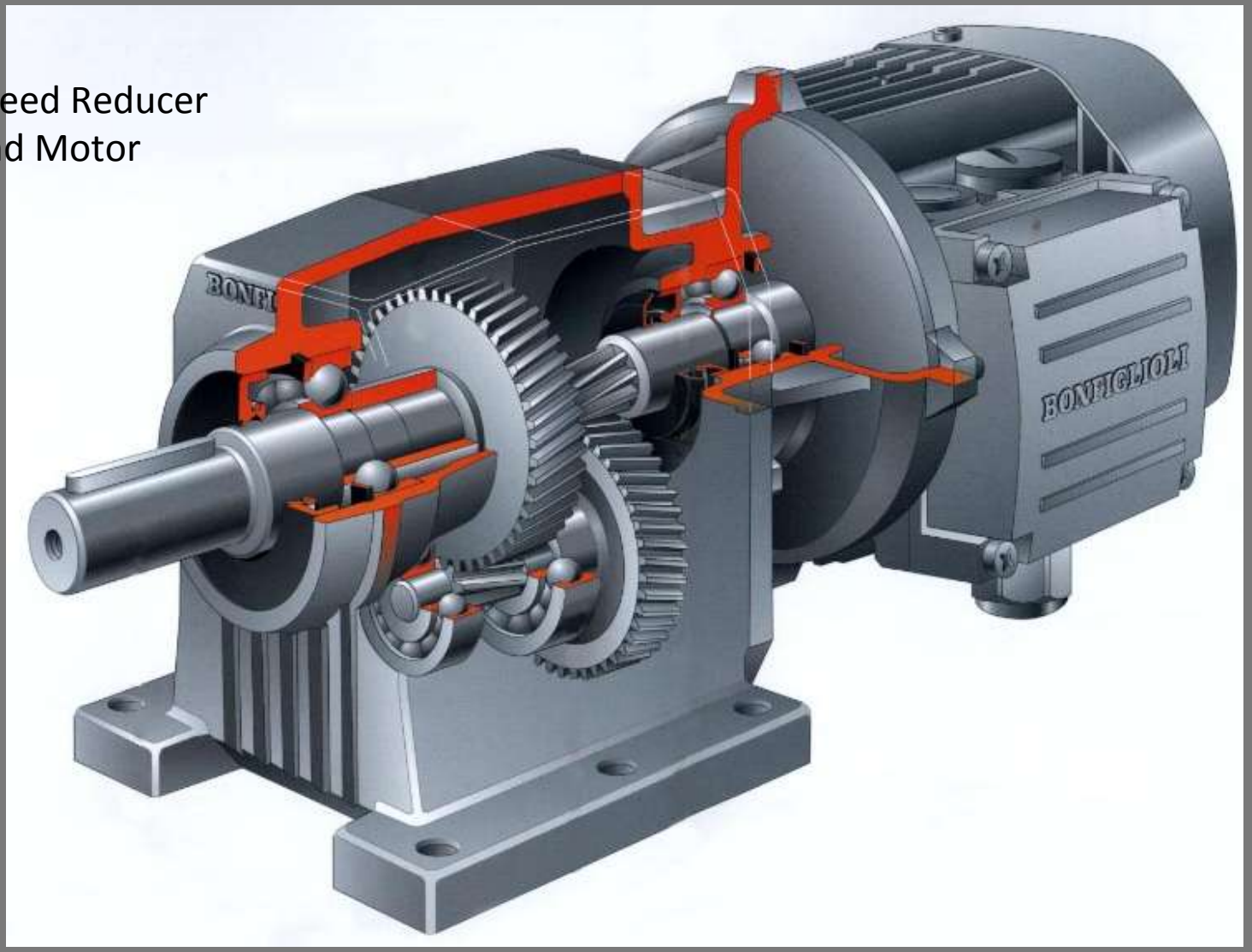
External Gear



15 Degrees of Ring Gear

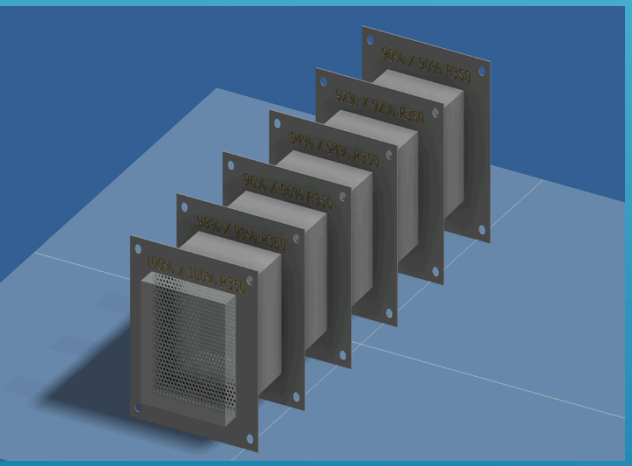


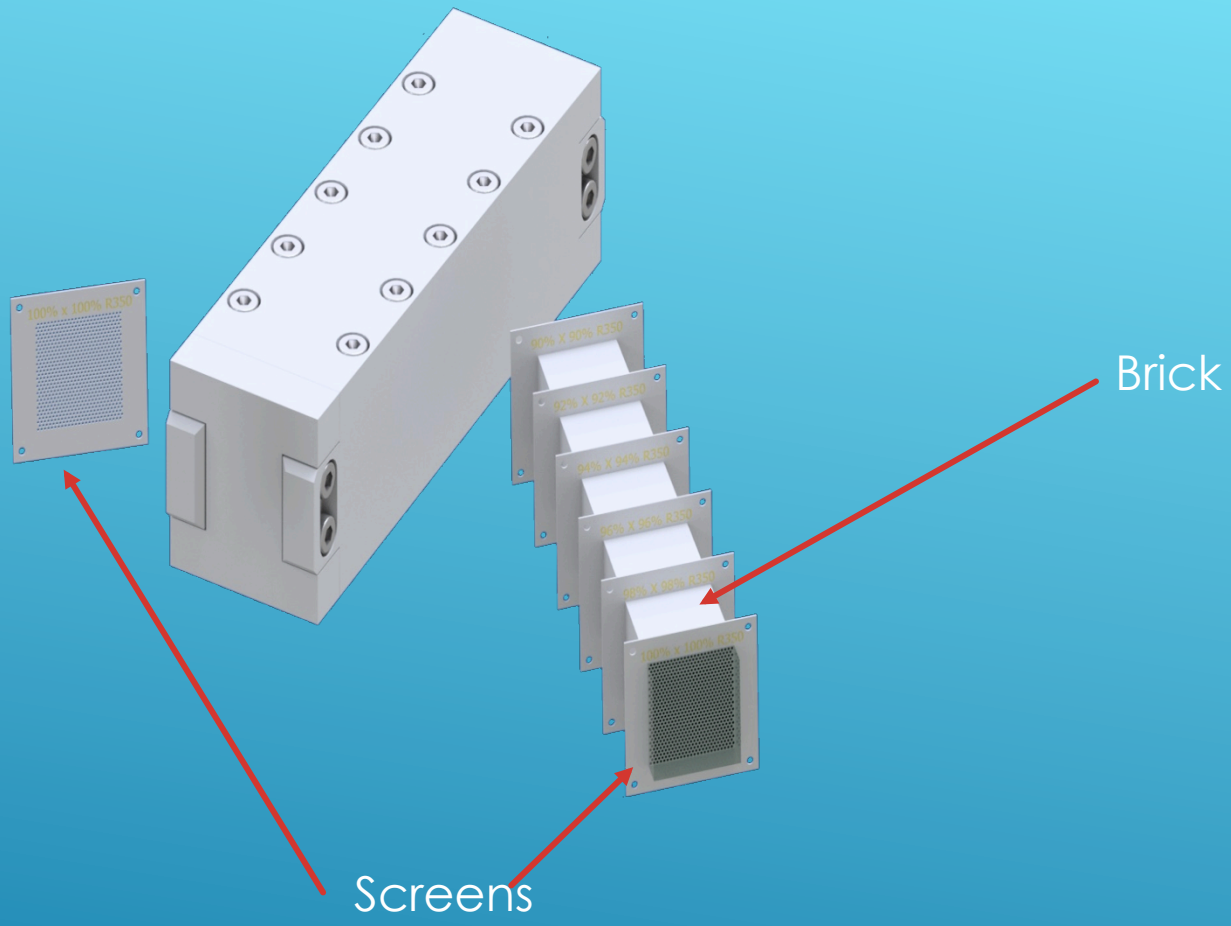
Speed Reducer
And Motor



# EmCal Update

## Spencer Locks



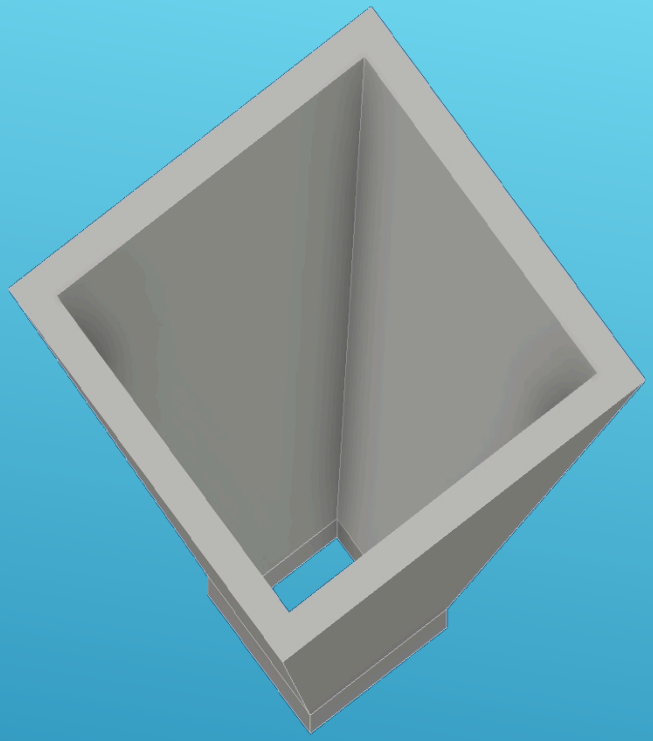


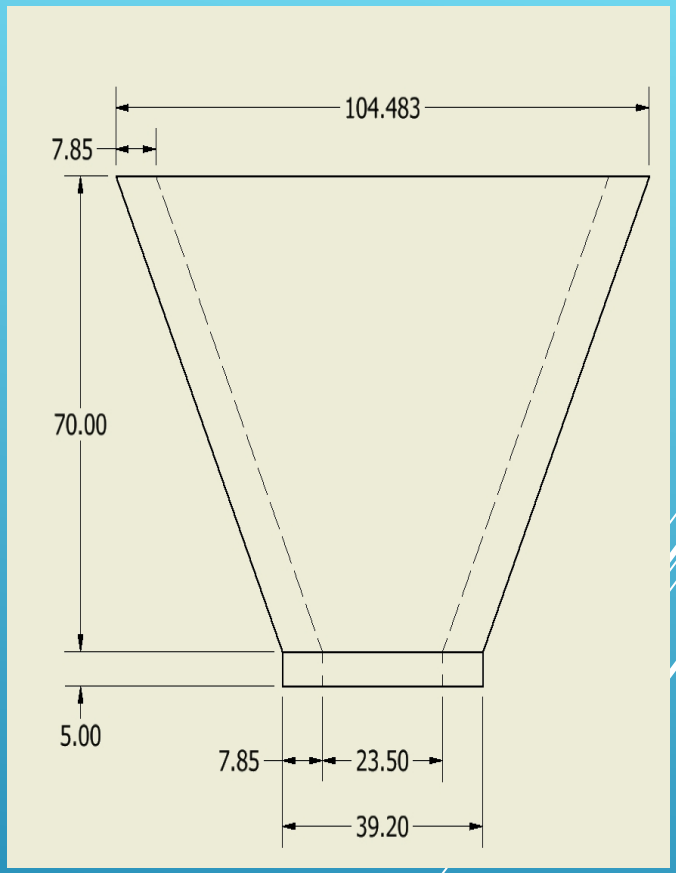

# Method One: Perpendicular screens

Spencer Locks, Rich Ruggiero, Sean Stoll, Jin Huang

- Perpendicular screens varying from 100% to 90% in increments of 2% will create the taper we need.
- The problem is not getting the taper, it's feeding the fibers through.
- Currently it takes an hour+ to feed all 750 fibers through. Sean and I are working on a way to expedite this process.

# Method One Overview






# Funnel Design

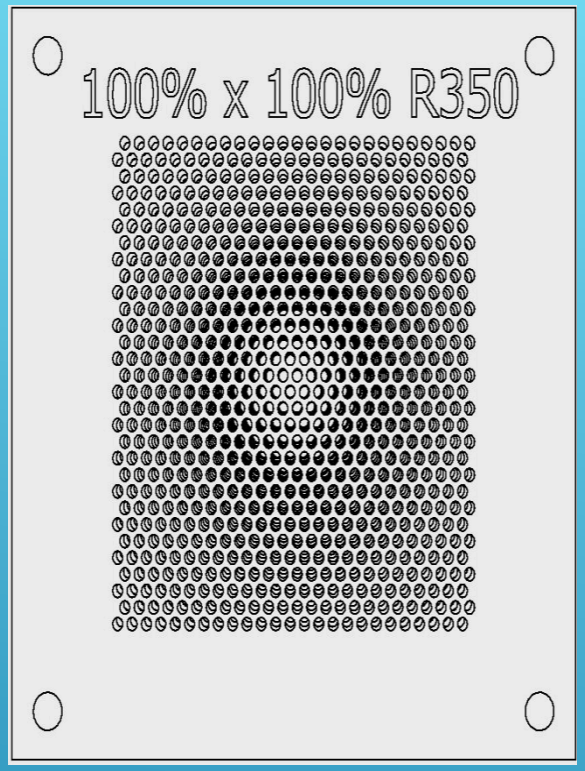
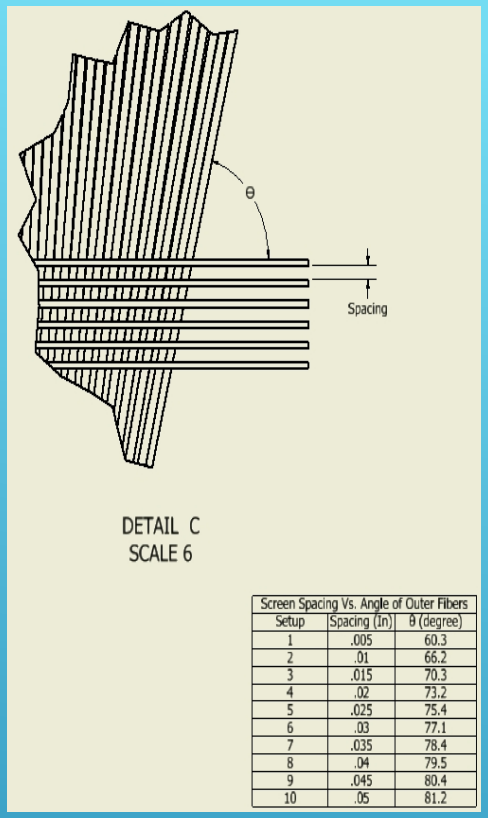



Figure 1




| Screen Spacing Vs. Angle of Outer Fibers | | |
|---|---|---|
| Setup | Spacing (In) | θ (degree) |
| 1 | .005 | 60.3 |
| 2 | .01 | 66.2 |
| 3 | .015 | 70.3 |
| 4 | .02 | 73.2 |
| 5 | .025 | 75.4 |
| 6 | .03 | 77.1 |
| 7 | .035 | 78.4 |
| 8 | .04 | 79.5 |
| 9 | .045 | 80.4 |
| 10 | .05 | 81.2 |

Figure 2

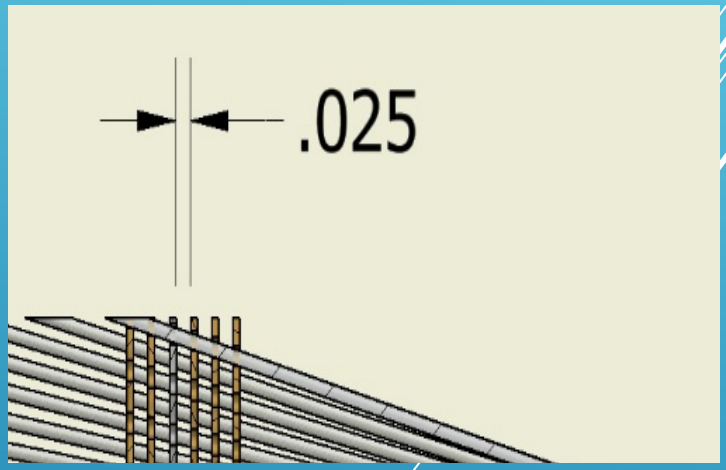
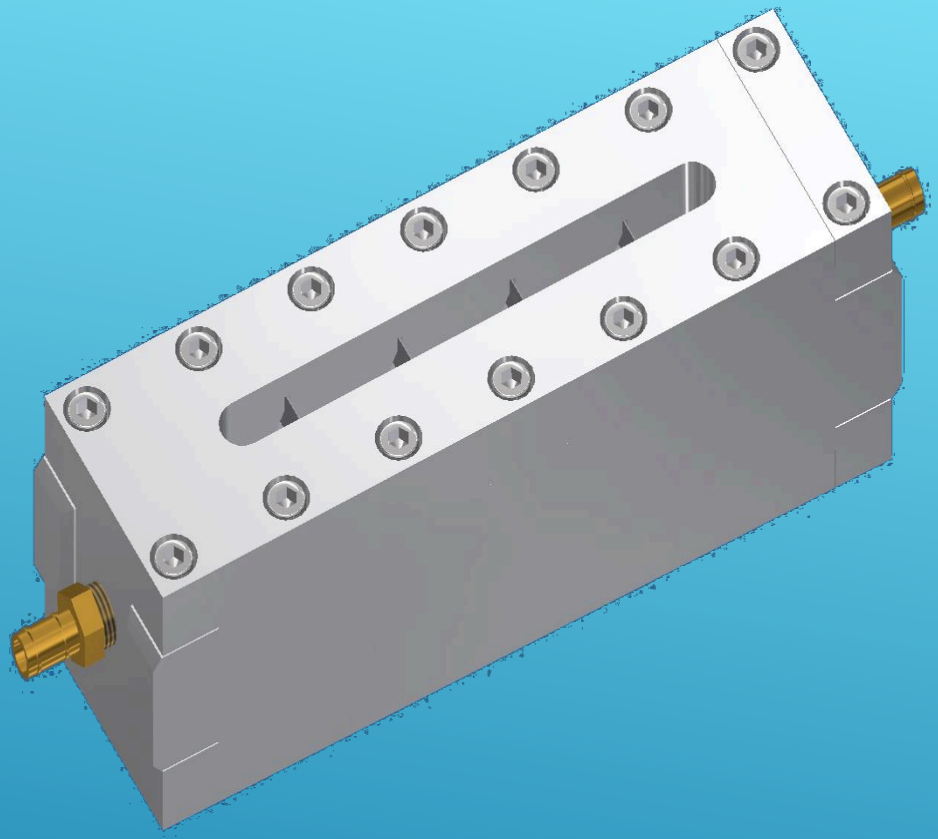


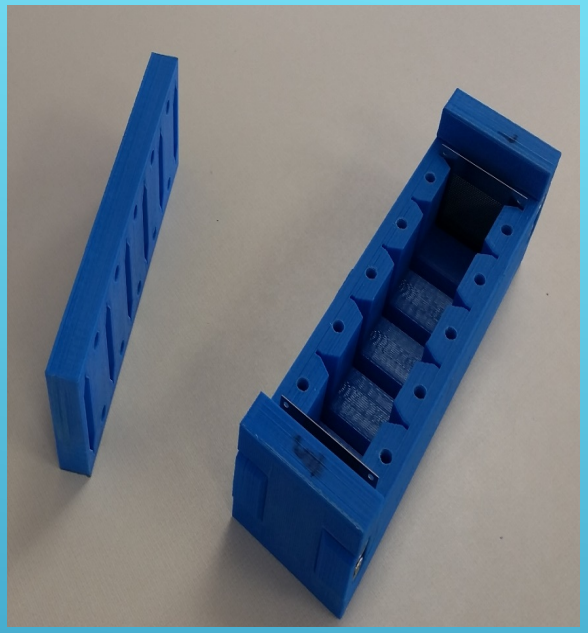

Figure 3

# Drawings Method One



# Updated Method One Mold

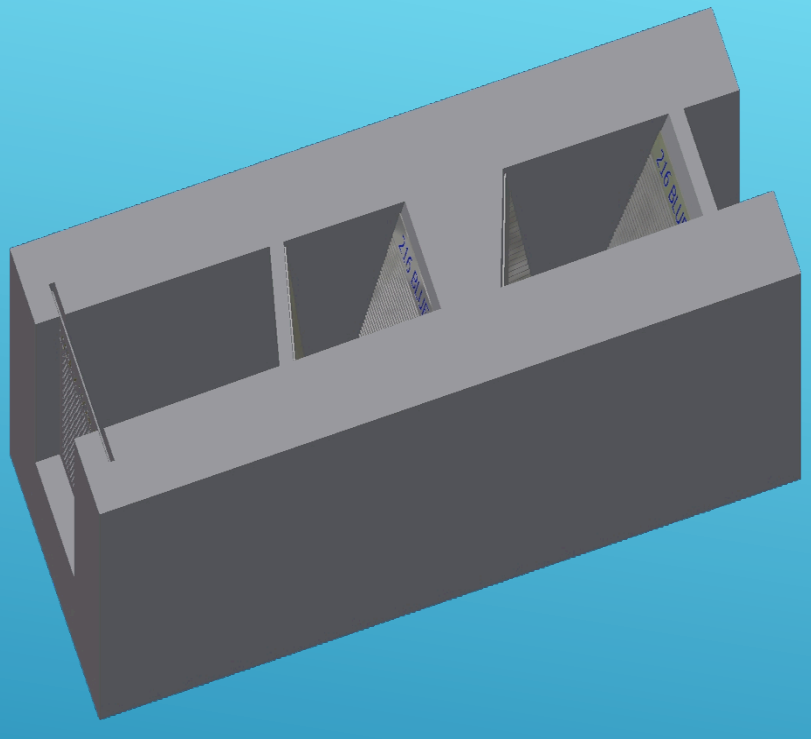
Spencer Locks, Rich Ruggiero, Sean Stoll, Jin Huang



# Results of Print

# Method One Status/ Future Progress

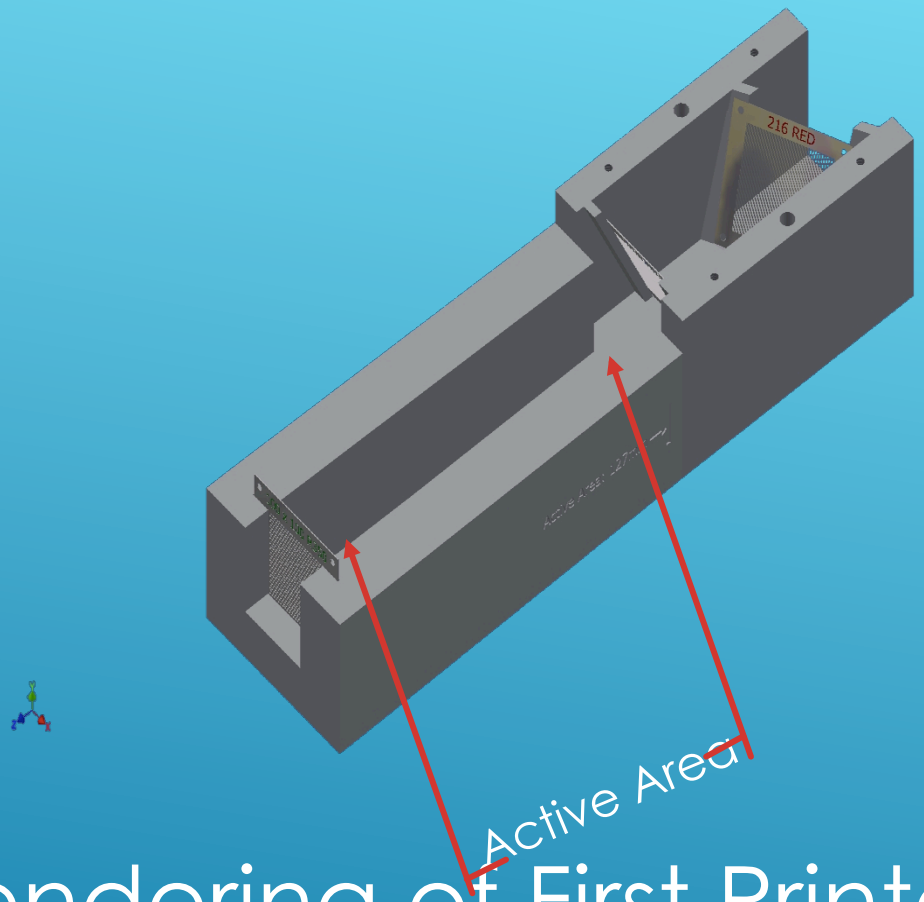
- The mold has been 3D printed, tapped and will be modified for vacuum and a test to see how a brick would turn out with this method.
- The mold will be made out of Al 6061 so for this mold we may need to mill the plastic from the tungsten brick.
- Instrumentation will be printing the additional pieces required for the Method One mold.



# Method Two: Wireframes

# Method Two Overview

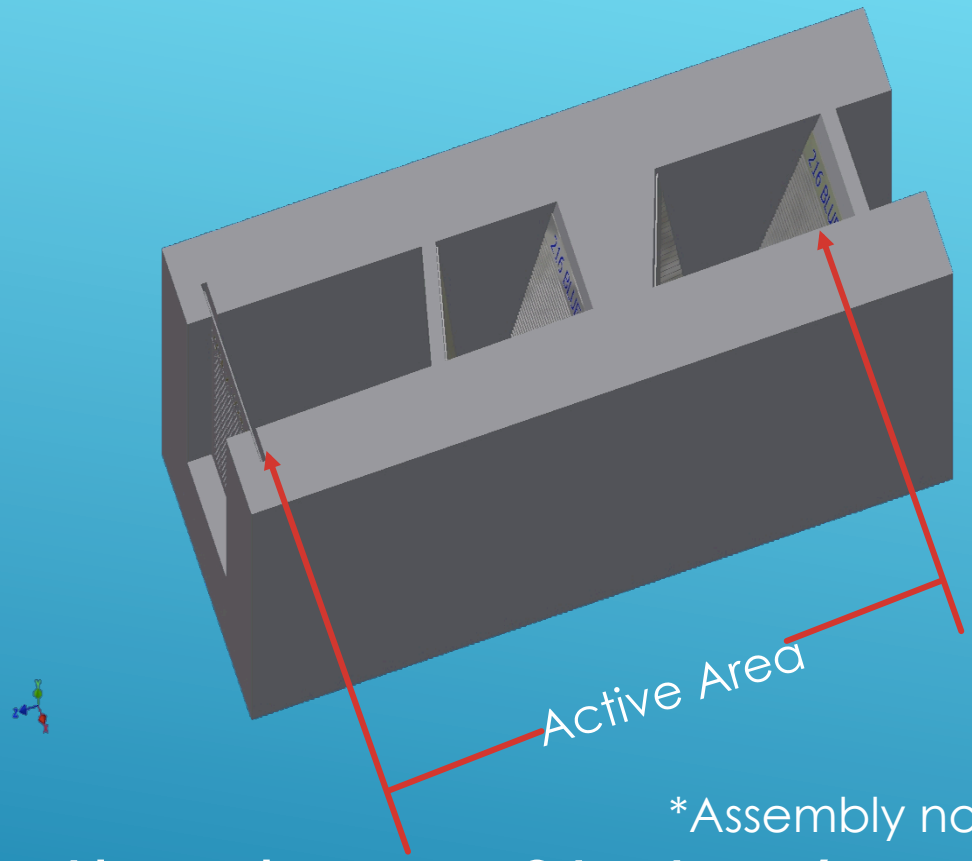
- Method two utilized wireframes that allow for easy threading of the fibers.
- The wireframes are positioned at compound angles which taper the fibers to the 90% required, however after creating the first prototype Mold/Assembly fixture we found that the wireframes must be within the active area.




# Rendering of First Printed Fixture

Spencer Locks, Rich Ruggiero, Sean Stoll, Jin Huang

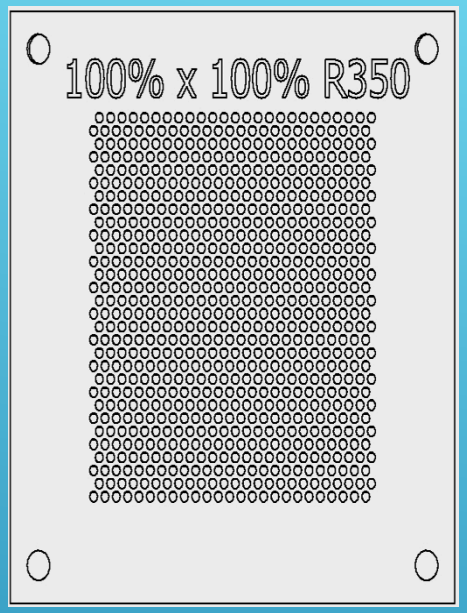

Active Area: 127mm
EmCal Double Projected Assembly Fixture Base




*Assembly not complete.

- Wireframes are now inside the active area.
- One more set of wireframes is introduced.

# Method Two Status/ Future Progress

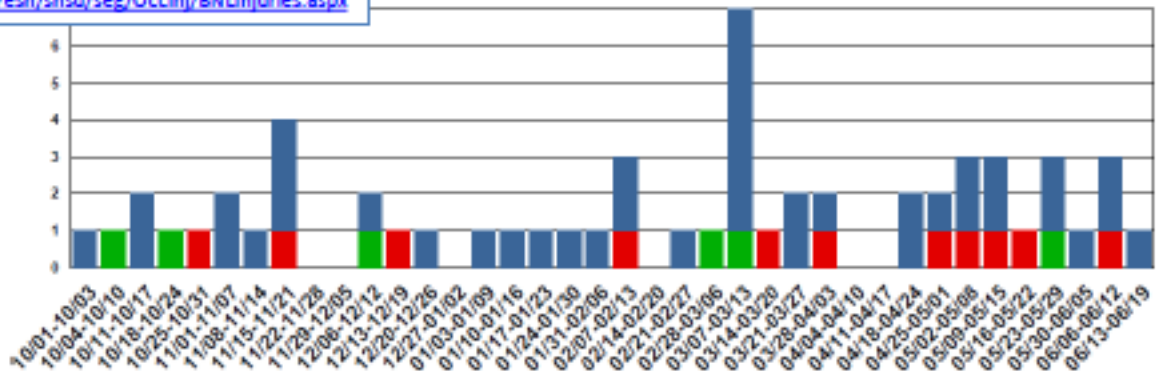



# Wireframes Lined Up With 100% Screen

- I am creating a funnel for Sean that will hopefully help with the fiber threading process. (The first Method)
- Instrumentation is going to print out the final parts for the prototype mold that will create the first brick. If all goes well we will have a good proof of concept and be able to improve the design.
- The second mold/ assembly fixture for Jin is in the works, this time with the wireframes inside of the active area. (Method Two) Using slots and cutting the mold into multiple pieces it can be manufactured more easily.

## Injuries Per Week (FY)
As of 6/19/2015

FY15 Injury Listing:
https://intranet.bnl.gov/esh/shsd/seg/OccInj/BNLInjuries.aspx




**Injury Status:**

FY15 YTD: DART – 11, TRC – 17, First Aid – 41
FY14: DART – 17, TRC – 33, First Aid – 38
FY13: DART – 18, TRC – 39, First Aid – 52

### Recent Injuries

| | | |
|---|---|---|
| 6/17/15 | Info Only | A subcontractor employee lacerated their left wrist while using a key hole saw. At the ER, surgical glue was used to close the wound. This is not recordable, but an exception to the reporting requirements. |
| 6/15/15 | First Aid | An employee injured their left hand after holding material in one hand while trying to attach the material together using the other hand. At the OMC, first aid was given. |
| 6/12/15 | First Aid | An employee was walking while on the phone and walked into a wall, receiving minor cuts on the forehead and eye area and a minor abrasion on the cheek. At the OMC, first aid was given. |
| 6/11/15 | DART | An employee injured a thumb while working on a machine. After transport to a local ER, the worker began to lose time. |
| 6/10/15 | First Aid | An employee injured an arm while lifting equipment. At the OMC, first aid was given. |
| 6/4/15 | First Aid | An employee reported back strain as a result of a training exercise off-site. At the OMC, first aid was given. |

| Recent Events | | |
|---|---|---|
| 6/16/15 | Non-Reportable | A Subject Matter Expert (SME) performed a receipt inspection of a 10,000 lb. load scale purchased through Grainger and manufactured by Adam Equipment, Serial Number AE9-Q368, Model HIS 10A. It was determined that the load scale did not meet the requirements in the Lifting Safety Subject Area and was not acceptable for use at this time. The following is a list of the findings: the 7-ton alloy load hook had no manufacturer name or trademark; bolt type shackle had no identifying markings at all (size, Weight Load Limit [WLL], manufacturer name or trademark); and no documentation of calibration was supplied with load scale. The SME confiscated the shackle and load hook to prevent any usage. (Event Link) |
| 6/16/15 | Non-Reportable | The exterior glass of a double pane glass door cracked after a projectile struck the glass when a string trimmer was operated in the vicinity at Bld. 373 on the South side. The Police responded and an incident report was documented. "Caution Entry Requires Permission" barrier tape was placed on either side of the door. No evidence was found, but it is suspected a rock was the cause of the damage from use of the string trimmer. There were no injuries and no one inside the building near the door when it occurred. (Event Link) |
| 6/16/15 | Non-Reportable | A technician was transporting a lead cask from Bld. 931 to Bld. 801 using a three-ton forklift. Upon entering the north driveway at Bld. 801, the side wall of the front left tire of the forklift blew out. The technician had performed all of the pre-safety checks associated with the forklift prior to using it and signed the safety inspection card. The forklift was carrying a normal load that consisted of a lead cask, weighing approx. 5,200 pounds, with the contents of the cask weighing no more than one pound. The technician did not hit any curbs or have any mishaps in driving. The route taken from Bld. 931 was the usual route with no deviation from the normal path and there was no foreign material on the path that would have caused an issue. There was neither an upset of the load nor any injuries associated with the event. (Event Link) |

# Where To Find PHENIX Engineering Info


http://www.phenix.bnl.gov/WWW/INTEGRATION/ME&Integration/DRL_SSint-page.htm